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INTRODUCTION

Agriculture and industry are the two main pillars of economy Irrigation is essential for the former just ower is for the latter We must have water for both unately, we have an ample supply of water in our rivers , however, is not evenly distributed over the year

Owing to scanty rainfall most of our rivers are reduced mere trickle in the winter season But they overflow r banks during the monsoon months and cause wide-ad suffering and devastation in many parts of the country recurrent calamity has kept our agriculture backward the people poor We have to meet this challenge ss we control floods and harness our rivers for the good our industry and agriculture no worth-while progress is ible The river valley projects included in the Five Year are to be judged in this context

CHAPTER I

POWER

Power is essential for industrial development In fact,
tent of power generation in any country is the true
of its economic prosperity and the standard of living
poeple Judged by this yardstick, India lags woefully
most of the Western countries The per capita
nption is 14 kilowatt hours in India compared with
in Canada, 2 400 in Sweden, 2,290 in the U S A,
n Norway and 16,188 in Switzerland Obviously, we
enerate and consume more power

ower can be derived from oil, coal and water
ineral-oil reserves are almost negligible We are
abundantly supplied with coal either Moreover,
known deposits of coal are concentrated in a few
amely, Bihar, West Bengal, Orissa, Madhya Pradesh
derabad In other parts of the country, the use of
or power generation is, therefore, uneconomical
sly, we must make the most of our water resources

complete survey of our water power resources is
e made The latest estimates, however, put the
ectric power potential of India at 40 million kw,
y about 0 5 million kw has been tapped so far
of course, utilise a larger percentage of our hydro-
potential which, if produced cheaply enough, will
industries to grow with consequent increase
nent and economic prosperity

The f[illegible]t hydro electric station in India was established on the [illegible]ver Cauvery in Mysore in 1903. This was followed by the [illegible] hydro electric plant at Bombay. During the first a[illegible] [illegible] World Wars there was speedy progress in the [illegible]ment of power. Since 1939 India has doubled [illegible] capacity for electric generation. It was 2.3 million kw [illegible] of which 0.56 million kw came from hydro electri[illegible]ns.

[illegible] and p[illegible]nd[illegible]ce the generation and distribution of electricity w[illegible] governed by the Indian Electricity Act of 1910 [illegible] h[illegible] is mer[illegible]ly a r[illegible] strictive and regulatory measure. In fact until 1925 neither the Central Government nor the Provincial Governments evinced any interest in pursuing a progressive policy of promoting industrial and power development. After 1925 the Provincial Governments in which popular Ministers had some power under the old system of dyarchy began to interest themselves in schemes for development of power and industries. But it was World War II which brought home to the Government the need for developing the country's hydro electric resources. The office of the Electrical Commissioner was created by the Government of India in 1941 to regulate, assist and control the electric power supply industry with a view to promoting the war effort. Subsequently it came to be known as the Central Water and Power Commission. It organises investigations and survey, carries out research and advises and assists the Central and State Governments on all matters relating to power projects. Finally, to ensure the rationalisation of electricity industry and the rapid electrification of rural areas the Electricity Supply Act of 1948 provided for the formation of Electricity Boards in the States and an Electricity

authority at the Centre The main functions of the Central Electricity Authority Board are to —

(1) evolve a uniform policy for power development,

(2) co-ordinate the activities of agencies concerned with the control and utilisation of power resources,

(3) arbitrate in disputes between a State Government or a State Electricity Board and the licensees, and

(4) carry out investigations and collect and publish data regarding the generation, distribution and consumption of power

It will thus be seen that India now possesses an adequate administrative machinery to plan and carry out an integrated programme for power development in the country

Since independence, the Central and the State Governments have been actively promoting schemes for power development Some 50 of these are being executed in accordance with the recommendations of the Planning Commission Most of these are an integral part of combined irrigation and power projects To mention a few, the Bokaro thermal station will generate 150,000 kw during the period of the First Five Year Plan, the Tilaiya hydro-electric station 4,000 kw and the Nangal hydro electric station 96,000 kw By 1955 56, the schemes included in the Plan will yield a total of 1 08 million kw and on completion 1 5 million kw

There is a large demand for power in the industrial areas of Bombay, Delhi, Uttar Pradesh, West Bengal and Madras In several States, especially Uttar Pradesh, there is a substantial demand for power for tube-wells

The additional supply from the power projects is being used for industrial agricultural as well as domestic purposes. A rough *estimate of consumption of electricity for different* purposes in 1950 and 1955 is given below

Type of use	Consumption of electricity (million kWh)				Percentage increase in 1955 over 1950
	1950	Percentage of total 1950	1955	Percentage of total 1955	
Domestic light and power	525	13	860	13	64
Commercial light and power	309	7	430	7	39
Industrial	2,604	63	4 100	63	58
Irrigation	162	4	332	5	105
Other purposes	558	13	752	12	35
Total	4 158	100	6 474	100	56

In the past while cities and towns had been electrified the rural areas were largely neglected This has led to a lopsided development of our economy Today Bombay and Calcutta alone consume 40 per cent of the total electricity generated in India while the other 60 per cent is unevenly distributed over the rest of the country In 1950 only 2 792 villages each with a population of less than 5 000 were supplied with electricity This means that out of every 200 villages only one was electrified and only 10 per cent of our people enjoyed the benefits of electricity More attention is now being devoted to rural areas Under the Plan large blocks of power will be made available to rural areas and the State Governments are taking steps to ensure that the villagers are enabled to use this supply to the best advantage

Finally, as and when large blocks of additional power become available, their utilisation will require careful planning It is estimated that to utilise one kw of power in industry, an investment of Rs 3000 is needed while for the same amount of power in agriculture a much smaller capital investment of about Rs 1200 per kw is necessary Therefore, additions to generating capacity should be made to keep in step with load development

CHAPTER II

IRRIGATION

Nothing grows on land without water The provision of adequate irrigation is therefore of primary importance to any agricultural economy At present assured irrigation is available for about 50 million acres or twice the area irrigated in any other country of the world This however constitutes less than a fifth of the total area under cultivation The remaining 220 million acres under cultivation depend on the mercy of the fickle monsoon

The rainfall in this country is irregular and unevenly distributed over the year Torrential rainfalls which bring floods in their wake are sometimes followed by long periods of drought Because of this uncertainty of rainfall Indian agriculture has been described as a gamble in the monsoon Small wonder that the agricultural development in India has not kept pace with the growth of population and we are faced with a chronic shortage in food and raw materials We must make good this deficiency as well as provide for our increasing population which is growing at the rate of 4 5 million annually

To raise the agricultural output we must obtain more out of every acre of cultivated land The area under cultivation must also be expanded by bringing the waste land under the plough The existence of 98 million acres of cultivable waste land and 58 million acres of current fallows point to the scope for more extensive and intensive cultivation respectively Larger irrigation facilities are needed for both

Irrigation is an ancient art in India Dams (Kulya) and canals (Sarsi) are mentioned in the Vedas Irrigation is the theme of many old treatises also The remains of irrigation works in the South testify to the existence of a well-developed irrigation system in ancient India Subsequently, canal systems were developed by the Mughals in northern India and in Bengal About a hundred years ago, between two to three million acres of land were under irrigation The Ganga Canal in Uttar Pradesh was the first major irrigation work undertaken by the British in 1854, followed by the Upper Bari Doab Canal in the Punjab and the Godavari and the Krishna delta systems in the South A number of other large irrigation works were started early in the present century

Minor Irrigation Projects

It is interesting to note that the area irrigated by minor works such as wells and tanks is in excess of that irrigated by major works Major and minor works are complementary and both have their place in the Five Year Plan

A provision of Rs 77 crore has been made in the Plan for minor irrigation works Out of this allotment, assistance will be given to farmers for repairing old tanks and wells and for digging new ones Tube-wells and pumping sets will be installed and small dams and channels will be built All these schemes will provide irrigation for over 11 million acres of additional land

Major Irrigation Projects

Major irrigation works are mostly linked with schemes for power generation and will harness the waters of some of our important rivers

About 1 356 million acre feet or 49 per cent of the mean annual rainfall flows down India s rivers annually Of this volume only 76 million acre feet (5 6 per cent) is at present being used for the purpose of irrigation and power generation and the remaining (94 4 per cent) runs to waste often causing untold damage before it joins the sea When the major projects now under execution have been completed India will begin to use 13 6 per cent of the total river flow

The possibilities of diverting the normal flow of rivers into irrigation canals have almost been exhausted Plans for the future development of irrigation therefore aim at impounding the surplus river flow during the monsoon for use during the dry weather

Some of the projects included in the Plan are multi purpose in scope Multi purpose projects are so called because of the manifold benefits they confer Apart from providing irrigation facilities for growing additional food and commercial crops the two other main benefits are the control of floods which cause enormous destruction to crop property cattle and human life every year and the generation of large blocks of hydro electric power Among the other benefits which accrue from the projects are the development of internal navigation which will relieve the pressure on the railways and facilitate soil conservation afforestation pisciculture the provision of drinking water and the eventual development of the riverside for purposes of recreation The importance of river valley projects in the country s economic development is evident from the high priority assigned to them in the First Five Year Plan Nearly a third of the total budget for the Plan has been earmarked for irrigation (including minor irrigation) and power projects and some of these are among the world s largest

The First Five Year Plan provides for the execution of about 140 major irrigation and multi-purpose projects and about 100 major power schemes They are expected to cost on completion Rs 765 crore An expenditure of of Rs 153 crore had been incurred up to the end of March 1951, out of a total provision of Rs 518 crore in the five year period for schemes under construction They are designed to irrigate an additional area of 8 5 million acres by the last year of the Plan and to generate 1 08 million kw of additional power After the completion and full development of these projects, the total addition to the area irrigated will be 16 9 million acres and to power 1 4 million kw

Thus the major and minor irrigation works included in the Plan will irrigate about 19 million acres and yield 4 2 million tons of additional food

CHAPTER III

SOME MAJOR PROJECTS

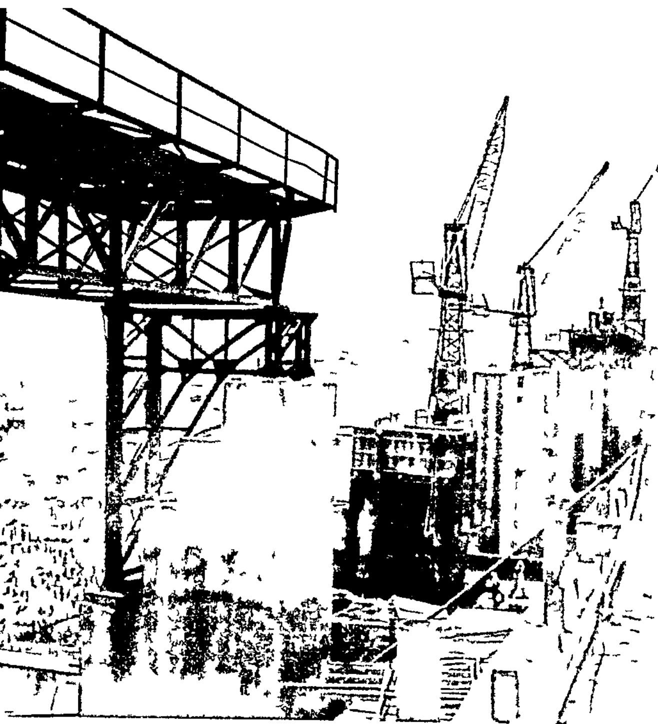
Bhakra Nangal Project

Let us now consider some of the major projects which have been included in the Five Year Plan The Bhakra Nangal multi purpose project is one of the largest in India It will utilise the waters of the river Sutlej and bring prosperity to the Punjab PEPSU and parts of Rajasthan

Before it enters the plain the Sutlej flows down a narrow mountain gorge at Bhakra about 50 miles above Rupar in the Ambala district A 690 foot high dam will be built across the river at this place The Bhakra dam will be three times as high as the famous Kutab Minar in Delhi and will rank as one of the highest dams in the world It will be 350 ft long at the base and over 1 700 ft at the road level On completion the dam will create a huge lake with a storage capacity for 7 4 m acre feet of water

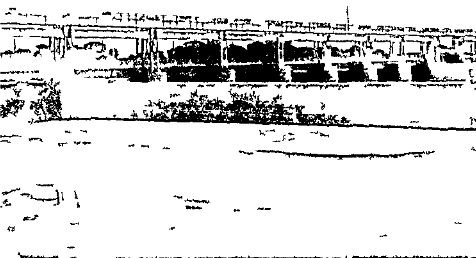
Before the giant Bhakra dam can be constructed the entire flow of the river Sutlej has to be canalised into two diversion tunnels each fifty feet in diameter and half a mile long Work on the tunnels is nearing completion

About 8 miles below the Bhakra dam a 90 foot high and nearly 1 000 foot long diversion dam has already been completed at Nangal It will regulate the supply of water from the Bhakra dam into the Nangal Hydel canal The dam has an inspection gallery 25 feet below the river bed



HIRAKUD PROJECT

Left Concrete Dam under construction



MAYURAKSHI PROJECT Tilpara barrage with the gates closed

BHAKRA NANGAL PROJECT Cement concrete lining of the right diversion tunnel in progress

KRA NANGAL PROJECT Power House No I under con truction

TUNGABHADRA DAM

HIRAKUD PROJECT L f n e e dam unde con truct on

KAKRAPARA PROJECT K krap a e

The 40 mile long Nangal Hydel canal takes off from the Nangal dam and will feed two power houses before it joins the Sirhind Irrigation Canal The two power stations will have an installed capacity of 48,000 kw each One of the power stations is expected to commence supply by June 1954 Practically the whole of the excavation work for the canal which cuts across the most difficult terrain has been completed and lining is in progress

The Bhakra canal system will comprise nearly 518 miles of main and branch canals, and nearly 2,000 miles of distributaries Work on the canals is ahead of the schedule It will irrigate 3 6 million acres regularly in the Punjab, PEPSU, and Rajasthan Even before completion of the Bhakra dam, non-perennial irrigation will be available for parts of Hissar, Ludhiana and Ferozepore and the famine ridden areas of Pepsu and Rajasthan in 1954

On completion, the project will add to the country's agricultural production about 1 3 million tons of wheat and other food grains 0 8 million tons of cotton, 0 54 million tons of sugarcane, 6 1 million tons of pulses and oilseeds and 1 5 million tons of green and dry fodder The peasantry in the areas covered by the project will thus be able to enhance its income by Rs 105 crore a year

Eventually, it is proposed to construct a hydro electric station with an installed capacity of 400 000 kw below the Bhakra dam But work on this and other power stations will probably be taken in hand only after the power output from the Nangal station mentioned above is utilised Electricity from this project will be supplied to some 150 towns in the Punjab, PEPSU, Delhi and Rajasthan Bulk supply will also be made available at Delhi for which an agreement for the supply of 20 000 kw has already been concluded

Power will be used by the railways by the industry for the manufacture of fertilisers chemicals sugar textiles ply wood and cement and by cottage industries It will also be utilised for tube wells

Finally about 30 new *mandis* will spring up in the river valley each of which will absorb about 30 000 people Nearly 900 000 urban and 2 million rural people will be rehabilitated The Bhakra Nangal project is thus one of the pillars of the rising edifice of a new India

Hirakud Project

The Hirakud Project will harness the river Mahanadi and bring prosperity to Orissa The most important feature of this project will be a dam which will be the longest in the world It will be 15 000 ft long with 12 8 miles of low earthen dykes The dam will impound 6 75 m acre feet of water creating a lake extending over 250 sq miles It will be the fourth largest artificial lake in the world There will also be a power house at the base of the dam which will have an installed capacity of 123 000 kw to begin with This power house is expected to commence supply by 1956 There will be an irrigation canal on either side of the dam

Initially the emphasis in the scheme was on flood control However in view of the urgent need to develop the economy of the region it is now proposed to give priority to irrigation so as to increase the irrigated area in the Sambalpur district and in the Mahanadi delta from 1 million acres to a little less than 2 million acres The first phase of the project is scheduled for completion in June 1956 The construction of the subsidiary dam and the second power house will be taken in hand after 1960 61 if adequate resources are available

Considerable progress has been made in the execution of this project Nearly 95 per cent of the excavation work and 6 per cent of the concrete and masonry work on the right concrete spillways has been done Similarly, the excavation work on the left concrete spillways has been completed while 30 per cent of the concrete and masonry work has been executed More than half the work on the dykes has been completed Orders for the plant and equipment required for the powerstation have been placed Work has also commenced on several transmission lines and sub stations

The cost of the project was first estimated at Rs 47 8 crore According to revised estimates, it will cost Rs 92 crore This increase is attributed mainly to a steep rise in the price of land and houses to be submerged by the reservior, increased cost of imported machinery owing to devaluation, rise in the cost of labour and finally increase in the area to be irrigated from 1 08 million acres to 1 92 million acres

The Hirakud Project will free the peasantry of Orissa from the nightmare of floods and famine It will provide irrigation for 1 8 million acres of land which will grow 73,500 tons of sugarcane This extra output will be worth more than Rs 17 crore Cheap power from the project will promote the growth of the iron and steel and aluminium industries The State Government will receive Rs 3 2 million from the sale of power For all these benefits, the investment of Rs 92 crore is fully justified

Damodar Valley Project

The Damodar Valley Project will serve Bihar and Bengal The aim of this multi purpose project is to tame the turbulent Damodar and its tributaries which overflow their banks and bring destruction, misery and deso-

lation to large parts of Bihar and Bengal It will comprise 8 storage dams with hydro electric installations a giant 200 000 kw thermal power station an extensive power transmission grid and an irrigation barrage with canals and distributaries

The project will take many years for completion and the first phase of development which is included in the Five Year Plan envisages the construction of four dams one each at Tilaiya Konar Maithon and Panchet Hill with an installed hydro electric capacity for 104 000 kw a barrage at Durgapur with an irrigation cum navigation canal a thermal power station at Bokaro (200 000 kw) and the requisite transmission system

The Tilaiya dam an all concrete structure 112 feet high and 1 147 feet long has been built across the river Barakar thus creating a lake 20 sq miles in area This reservoir will provide *kharif irrigation for 24 000 acres and rabi* irrigation for 75 000 acres The hydro electric station (4 000 kw) built near the dam will meet the power requirements of the mica mines at Kodarma and Hazaribagh and of Gaya which suffers from an acute shortage of electricity

Another dam on the river Konar a tributary of the Damodar consists of a concrete section across the bed of the river with earthen sections on either side It will supply water for cooling the Bokaro thermal plant and will irrigate 104 000 acres Work was commenced in the middle of 1950 and the dam will be completed shortly There will eventually be an underground hydro electric power station below the dam with a capacity for 40 000 kw This however will not be undertaken at present

The earthen dam, across the lower reaches of the river Barakar at Maithon is primarily meant for flood control and will impound 1.1 million acre feet of water. The underground hydro electric station near the dam with a capacity for 60,000 kw. will be ready in 1956. The construction of the main dam and the embankment has made considerable progress while the dyke is almost ready.

The biggest of the four dams will be located at Panchet Hill. Designed primarily for flood control, it will store about 1.2 million acre feet of water. A 40,000 kw. hydro-electric station will be built near the dam and will be completed by 1957-58.

Not being a snow fed river, the Damodar receives four-fifths of its annual water supply from the monsoon. Even after the completion of the dam the amount of water available for power generation will, therefore vary from season to season. The output of the hydro electric station will be substantially larger during the monsoon months than in the dry season. To ensure that a steady supply of power is available throughout the year a thermal power station has been built at Bokaro which will utilise the low grade coal abundantly available nearby. Located below the confluence of the Konar and the Bokaro it has an installed capacity of 150,000 kw. at present and a further 50,000 kw. will be added later.

A 2,271 foot long and 88 foot high barrage will be built at Durgapur in West Bengal to feed 1,552 miles of canals and distributaries. This network of canals will irrigate over 1 million acres. About 85 miles of these canals will be navigable and provide an alternative means of communication between Calcutta and the West Bengal coalfields. The construction of

th barrage and the excavation of the canals has already commenced The barrage is to be completed by June 1955 Although the entire navigation cum irrigation system will be ready by June 1956 water for irrigation will be available earlier

The project will stimulate industrial progress in the Damodar Valley which is full of mineral wealth such as iron ore coal mica and manganese It will also eradicate the scourge of flood and malaria in West Bengal irrigate large blocks of land and thus add to the State s food resources

Tungabhadra Project

The inauguration of the Tungabhadra dam on July 1 1953 ushered in a new era in the economic life of arid Rayalaseema and the adjoining areas of the Hyderabad State

This multi purpose project is now a joint undertaking of the Governments of Andhra Mysore and Hyderabad It comprises a dam 7 942 ft long and 160 ft high which has already been completed The reservoir has a water spread of 133 sq miles and a storage capacity for 2 6 million acre feet On either side of the dam is a canal The 225 mile canal on the right will irrigate about 250 000 acres in Andhra and Mysore States while the 127 mile canal on the left will irrigate about 450 000 acres in Hyderabad

Nearly 186 miles of canals and 900 miles of distributaries and field channels have been completed Eventually the project will benefit an area of 2 million acres out of which 7 lakh acres will be irrigated by 1955 56

Besides the provision for irrigation, the project envisages the generation of hydro-electric power On the Andhra-Mysore side, there will be two power stations—one below the dam and the other at the end of a 215-mile long canal at Bukhasagaram In the initial stage, each of the two power stations will have two 9,000 kw generating units, orders for which have already been placed On the Hyderabad side also, a hydro electric station will be constructed below the dam In the initial stages, it is proposed to install three machines of 7,500 kw each A unique feature this project is that it is being built entirely by Indians without any foreign assistance

Kakrapara Project

The Kakrapara project in Bombay will stimulate the development of the Tapti valley The river Tapti rises in the Satpura hills of Madhya Pradesh It flows 250 miles in the Bombay State before entering the Arabian Sea Its large catchment area (about 26,000 sq miles) has a total water-flow of about 16 million acre-feet The wealth of the valley, however, remains untapped for want of cheap power and irrigation

Initially, an ambitious programme had been drawn up for the development of the entire valley However, the paucity of funds and technical personnel ruled out this integrated development, and it was decided to take up the Kakrapara project first It provides for the construction of a weir, 2,175 ft long and 45 ft high, on the rocky river bed near Kakrapara 50 miles above Surat The weir will feed a 850 mile long canal system which will irrigate 6,52,000 acres annually As a result of this project the production of foodgrains will in-

crease by 1 60 000 tons and of cotton by 16 000 tons The possibilities of growing long staple cotton for which India depends on Egypt will also be explored

This comparatively small project is being financed entirely by the Bombay Government and will be ready in June 1956 The completion of the Kakrapara weir on June 29 1953 marked the first step in making this valley the granary of Gujerat

Machkund Project

The Machkund hydro electric project is designed to harness the river Machkund which forms the boundary between Andhra and Orissa In accordance with this scheme a power house is being built at Duduma 125 miles by road from Vishakapatnam where a drop of 859 feet is available The cost of the project and the power to be generated will be shared between Andhra and Orissa in the ratio of 7 3

The scheme involves the construction of a storage reservoir at Jalaput a diversion dam 17 miles below a flume tunnel 3 900 feet long a pressure tunnel 3 000 feet long and the necessary surge tank forebay penstocks etc To begin with the power house will have 3 generating units each capable of producing 17 200 kw and eventually there will be 6 generating units with a capacity for 102 000 kw

Good progress has been made in the execution of the project About 51 per cent of the excavation work 50 per cent of the masonry work and 20 per cent of concrete lining for the diversion dam has been completed

Mayurakshi Project

Mayurakshi, one of the most important projects undertaken by the West Bengal Government, is to be carried out in two stages The first stage of the project was completed in 1951 with the construction of a diversion barrage at Tirpala near Suri in West Bengal On either side of the barrage is a canal The two canals will irrigate 6,00,000 acres, and the extra output will be 3,00,000 tons of paddy and 50,000 tons of wheat, potatoes and pulses One lakh acres received irrigation from the project in 1952

It is also proposed to build a storage dam on the Mayurakshi, 12 miles below Dumka This reservoir with a capacity for 5,00,000 acre feet of water will provide *rabi* irrigation for about 1,00,000 acres A 4,000 kw hydro electric plant will be installed for the supply of power to Birbhum and Murshidabad in West Bengal and the Santhal Parganas in Bihar

The project will be completed by 1955 at a total cost of Rs 15 5 crore

CHAPTER IV

PEOPLE S DIVIDEND

The nation is spending more than Rs 100 crore annually on the projects This amount far exceeds anything spent on the river valley projects in the pre independence days What will be the return from these projects ?

Well we are building for tomorrow but in a way we are building for today also Scores of river valley projects have been benefitting our people from the day the fir t clod of earth was dug The very fact that more than a hundred schemes are under e ecution in different parts of India means that thousands of people in these areas have been absorbed in gainful employment In fact some of the surrounding districts where the excavation of canals is in full swing have experienced an acute shortage of agricultural labour at harvest time Again hundreds of miles of roads have been built and new colonies have grown up in the project areas

These schemes will enable the country to save crores of rupees which are spent annually on fighting floods and famines We will also save on the import of food grains The magnitude of this saving can be judged from the fact that we have already spent more than Rs 750 crore on foodgrain imports This is more than the amount the country proposes to spend on river valley projects during the period of the First Five Year Plan

Since orthodox economists do not favour expenditure the return from which is less than the interest on capital we may consider the direct return to the State from these

projects The State's dividend from investment on the projects will take the form of enhanced land revenue, betterment fees and revenue from the sale of water for irrigation and of electric power A project begins to bear fruit as soon as the water is released into its network of canals and distributaries For instance, the Bhakra water will be sold in the perennially irrigated areas at the rate of Rs 12 per acre and in the non perennial tracts at Rs 7-8-0 per acre, while the Damodar Valley Corporation will charge Rs 10 per acre for the *Kharif* crops and Rs 15 per acre for the *rabi* crops In Orissa, the rate for the Hirakud water will vary according to crops For instance Rs 13 per acre will be charged for sugarcane, Rs 8 8 0 for paddy and Rs 6 for wheat

Similarly, the figures for increase in land revenue will vary from Rs 3 per acre in the Bhakra project area to Rs 2 in the Hirakud region, and in betterment fee from Rs 150 per acre in West Bengal to Rs 75 per acre in the Bhakra area

Another major item of monetary return is the sale of electric power In all, about 1 4 million kw of additional power will be generated by the projects on completion The rate for the sale of electricity will, of course vary from place to place

Then there is the people's dividend A large number of our people will reap a rich harvest of benefits from these projects Electricity will stimulate the growth of large scale, small scale and cottage industries and thus open new avenues for employment Electricity will transform life in the villages

CHAPTER IX

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CHAPTER V

PUBLIC CO-OPERATION AND ADMINISTRATION

The major and minor irrigation and power projects form the core of the Five Year Plan Work of such significance and magnitude can be executed only with the co operation of the people How can the people help in implementing these projects ?

The value of the land served by the projects will increase appreciably It is but fair, therefore, that the beneficiaries from the schemes should share this unearned increment with the State For instance, they should be willing to pay betterment fees and taxes levied by the Government

Co operation can be sought by the State and offered by the people in another way also The excavation of canals through contractors involves heavy expenditure By entrusting this and other unskilled work to co operatives of village workers the expenditure can be considerably reduced and employment created for thousands of people Also, the people will be enabled to participate in the work for their betterment

Public co operation can be sought in connection with the minor irrigation schemes also As already mentioned, these will irrigate 11 million acres Although the initial outlay on them is small, they need constant maintenance Their upkeep is largely the responsibility of the people *They will be the losers if these works are neglected*

It is gratifying indeed that public co operation during the first two years of the Plan has exceeded common expectations

Administration

The most ambitious plan can flounder on the rock of inefficiency We must therefore have an efficient administrative machinery to execute these projects

Since the days of provincial autonomy irrigation and power have mainly been responsibility of the States Under the Plan too most of the river valley projects are being executed by the State Governments assisted by the Central Water and Power Commission This body was set up to initiate and co ordinate schemes for the control conservation and utilisation of India s water resources Its functions are to —

(1) carry out investigations and surveys and prepare schemes for the development of river valleys

(2) give advice and assistance to the State Governments

(3) advise the Central Government on inter State disputes in connection with the river valley schemes

(4) arrange for the training of engineers required for designing and constructing dams and large power plants

(5) carry out research on the various problems connected with the development of river valleys

The technical, financial and administrative problems involved in the implementation of major irrigation and power schemes are such that it is not always possible for a government department to deal with them speedily Semi-autonomous corporations or Boards with considerable powers to deal with the problem on the spot have, therefore, been set up to carry out some of the major projects

The Damodar Valley Corporation is an autonomous corporation consisting of the representatives of the Central Government, and of the Bihar and West Bengal Governments It is responsible for the execution of irrigation, power and flood control schemes It is also responsible for the integrated development of the valley's land, water, forest and mineral resources It can raise loans and fix rates for the supply of water and electricity to the consumers

For the Bhakra Nangal Scheme, there is the Bhakra Control Board composed of the representatives of the Punjab, PEPSU and Rajasthan Governments The Board is assisted by an advisory body of financial experts and engineers of the Government of India, Punjab, PEPSU, and Rajasthan There is a similar Board for the Hirakud Project also

CHAPTER VI

PROGRESS

Broadly speaking the first Five Year Plan includes projects which were under execution and on which large sums of money had been spent before the formulation of the Plan On completion these irrigation and power schemes are estimated to cost Rs 765 crore Out of this sum Rs 153 crore had been spent up to March 1951 During the two years 1951 53 a sum of about Rs 190 crore was spent compared with the target of Rs 206 crore In terms of expenditure therefore satisfactory progress has been made in the implementation of the projects

Although the full benefits from the projects will be available only on their completion or perhaps a little later it is gratifying indeed that the targets fixed for the year 1952 53 have been substantially attained For instance against the target of 239 000 kw by 1952 53 new power plants of 425 000 kw capacity have been installed As for irrigation the target for 1952 53 was 1 89 million acres whereas more than 1 5 million acres of additional land have been brought under irrigation An analysis of the data given in the following pages reveals that while the Punjab and Uttar Pradesh have done slightly better than anticipated Bihar Madras Rajasthan and the Damodar Valley Project have been behind the schedule

On the whole the progress of power and irrigation projects has been satisfactory and even bette results are expected during the remaining period of the Plan

PROGRAMME FOR POWER AND IRRIGATION



ADDITIONAL POWER

(In lakh kilowatts)

Target		Achievement
	1955 56	
	1951 52	
	1952 53	



ADDITIONAL IRRIGATION

(In million acres)

Target		Achievement
	1955 56	
	1951 52	
	1952 53	